

STATE OF VERMONT
PUBLIC SERVICE BOARD

Petition by the Washington Electric)
Cooperative, Inc., Pursuant to 30 V.S.A.)
§248(j), for a Certificate of Public Good) Docket No. _____
Authorizing the Reconstruction of the)
East Montpelier Substation)

PREFILED TESTIMONY OF
ROBERT F. KISCHKO

ON BEHALF OF
WASHINGTON ELECTRIC COOPERATIVE, INC.

Mr. Kischko testifies about the general state of the existing East Montpelier Substation, the general construction features of the new substation, , and how the construction of the new substation and its operation will not result in undue noise.

PREFILED TESTIMONY OF
ROBERT F. KISCHKO
STANTEC, INC.

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5 **Q1. Please state your name and address.**

6 A1. Robert F. Kischko, P.E., Stantec Consulting Services, Inc., 54 Route 106, No.
7 Springfield, VT 05150.

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9 **Q2. What position do you hold and what is your affiliation with Washington**
10 **Electric Cooperative, Inc.**

11 A2. I am an Electrical Division Manager and Associate for Stantec Consulting
12 Services, Inc. Washington Electric Cooperative, Inc. is a client for whom we provide
13 electrical and civil engineering support.

14

15 **Q3. What is your educational and work experience?**

16 A3. I am a Vermont Professional Engineer, registration #5977 Electrical (11/1/90),
17 and a graduate of the American Electric Power School of Substation Design 1970. I have
18 various affiliations which include, but are not limited to the NFPA (National Fire
19 Protection Association), the Northeast Association of Electric Cooperatives and the
20 NCEES (National Council of Examiners for Engineering and Surveying). I have over 30
21 years of electrical design experience, including electrical substations and
22 underground/overhead distribution systems. This experience includes, but is not limited

1 to, the following: (1) three years of electrical design experience in electrical substation
2 design ranging from small (69/12.47 kV, 5MVA) to major (345/138 kV, 600 MVA)
3 substations for AEP in Canton, Ohio; (2) seven years experience for Morrison Knudsen
4 Co., Boise, Idaho, now known as the Washington Construction, a major worldwide
5 engineering/contractor, working on various mining and power projects, including
6 substations in Wyoming, New Mexico, Alaska and South America; (3) two years
7 experience for Alpha Engineers in Pocatello, Idaho, a small consulting firm where
8 various projects includes RUS and Idaho Power Company substations and distribution
9 projects; and (4) over twenty years experience at Stantec Consulting (formerly Dufresne-
10 Henry) where I have been involved with electrical design and project management for
11 various projects, including utility substations for Green Mountain Power, Logan Airport,
12 Citizens Utilities, New Hampshire Electric Cooperative, Otis Air Force Base on Cape
13 Cod, and private industry. I was also involved in the design of Washington Electric
14 Cooperative's Moretown, South Walden and Maple Corner Substations constructed in
15 2001, 2004 and 2006 respectively. *See WEC Exhibit 1(Z)(RK-1(Z))*, copy of Robert
16 Kischko's CV.

17
18 **Q4. What is the purpose of your testimony?**

19 **A4.** My testimony will describe the general state of the existing East Montpelier
20 Substation, the general construction features of the new substation and whether the
21 construction of the new substation and its operation will result in undue noise.

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2 **Q5. Please describe the existing East Montpelier Substation.**

3 A5. The East Montpelier Substation is located at 130 Quaker Hill Road in East
4 Montpelier, Vermont. The substation contains three 1667 kVa transformers that provide
5 transformation of the 34.5 kV subtransmission line voltage to a distribution voltage of
6 12.5 kV. Two of the transformers have reached the end of their useful lives, while the
7 third transformer, which was installed in 2000, will be used as a spare. Construction of
8 the new substation will include the installation of energy efficient, environmentally
9 friendly 1667 kVa transformers manufactured by Cooper Power Systems. The power
10 transformers will utilize Cooper Power Systems' Envirotemp® FR3 dielectric fluid
11 which is derived from 100% edible seed oils and other food grade additives, thereby
12 minimizing any negative environmental impacts. The substation provides electrical
13 transformation from WEC's 9 mile 34.5 kV transmission line to three 12.5 kV
14 distribution feeders.

15

16 The substation's support structure is composed of wooden poles and crossarms
17 initially constructed in 1968 in accordance with Rural Utilities Service and National
18 Electric Safety Code requirements in existence at that time. Those standards have since
19 been modified to ensure safe clearance distances for both equipment and operating
20 personnel, making the existing structure out of compliance with current standards.

21

1 While temporary modifications have been made to assure reasonable reliability,
2 the wooden structure and related transformation equipment have reached the end of their
3 useful life cycle. A general inspection of the East Montpelier substation reveals
4 advanced rot and deterioration of the wood structure, a lack of safe working clearances
5 between energized high voltage disconnects, as well as old and outdated equipment and
6 connections. The present structure has deteriorated beyond reasonable economic repair.

7
8 The existing East Montpelier Substation makes no allowances for single-phase
9 protection or individual phase balancing and voltage regulation. The nature of the
10 existing long distance radial distribution lines and bus regulation make it extremely
11 difficult to improve the load balance on the circuits and transformers. In addition, the
12 existing Maple Corner Substation presently lacks necessary oil spill containment as
13 required by the RUS.

14
15 **Q6. Please describe the proposed construction of the new substation.**

16 **A6.** The proposed substation will be reconstructed in the footprint of the current
17 substation site including its parking lot. WEC proposes to extend the southeast side of
18 the substation fence an additional 30 feet into the parking lot of the current substation
19 facility. The dimensions of the existing four-sided, fenced-in area are 49'6" x 49'10".
20 The new substation site will form a polygonal-shaped fenced-in area that is 80' at its
21 widest in an east-to-west direction, and 100' at its widest in a north-to-south direction.

1 The enlarged fenced in area will allow for proper working clearances around energized
2 equipment, as well as the ability to accommodate a portable substation in the event of a
3 substation transformer failure. A fair and accurate copy of the full design and site
4 specifications, which were prepared by me or under my supervision are attached as as
5 **WEC Exhibits 1(C1)-(C4) (RK-1(C1)-(C4)); WEC Exhibits 1(E0)-(E10)(RK-1(E0)-**
6 **(E10)); WEC Exhibits (S1)-(S4)(RK-(S1)-(S4).**

7 The project consists of replacing the existing wooden substation structure and
8 equipment with a galvanized steel structure, the high-side portion of which will be
9 approximately 28'8" from ground level to the top of the airbrake switch. The low-side
10 support structure will be 20'0" above finished grade. The proposed high side of the
11 substation will be approximately 4'2" lower in overall height than the existing wood
12 structure, while the low side support structure will remain approximately the same height.
13 **WEC Exhibits 1(E3) & 1(E4) (RK-1 (E3) & (E4)).** The overall profile of the
14 substation generally will remain substantially similar. *Id.*; **WEC Exhibits 6(a)-6(c),**
15 photos of existing East Montpelier substation and the recently rebuilt Maple Corner
16 substation, which utilizes the same generic substation design proposed for this project.
17 Three new 1667 kVA low-loss power transformers, individual circuit regulation, remote
18 monitoring, and solid-state, single/three-phase fault protection will be utilized. Oil spill
19 containment as required by RUS will also be incorporated. **WEC Exhibits 1(C2) &**
20 **1(C3) (RK-1(C2) & 1(C3)).** The site will also contain a 12' x 8' concrete block control

1 building located at the southwest corner of the site. **WEC Exhibits 1(C2) & 1(E6)**
2 **(RK-1(C2) & 1(E6))**, , substation site and design specifications.

3
4 The existing overhead distribution feeder exiting the substation from the
5 southeast will be placed underground to first pre-existing distribution pole on the feeder.

6
7 The existing fenced-in area is built upon approximately 36 inches of crushed
8 gravel and 6 inches of crushed stone. The parking area adjacent to the existing fenced-in
9 area, which will become part of the new fenced-in area, currently has in excess of 24
10 inches of crushed gravel. The proposed project involves minimal earth disturbance
11 entailing the removal of the existing 6 inches of crushed stone in the fenced-in area, and
12 the placement of an additional 6 inches of crushed gravel, topped by 3 to 4 inches of
13 crushed stone. The expanded fenced-in area will have 6 to 12 inches of crushed gravel
14 added to the existing surface, topped by 3 to 4 inches of crushed stone.

15
16 The existing substation will be dismantled prior to the commencement of
17 construction of the proposed substation. Barring any unforeseen events, WEC anticipates
18 that reconstruction of the new substation will begin in September, 2010, with re-
19 energization scheduled for the week of November 29th.

1

2 **Q8. Will the proposed facility create any undue noise?**

3 A8. Except for the normal and very temporary noise associated with construction of
4 the facility, the noise will be limited to the very low hum of the transformers within the
5 substation. This hum should not be audible beyond the fence line enclosing the
6 substation, and will certainly not be audible from the road. The transformers to be
7 installed in the new facility will be of low-loss design, and the resulting noise level will
8 be significantly less than the level of the transformers currently in place. In addition, all
9 new connectors utilized in the new substation will be of a new improved type that serves
10 to reduce the buzzing noise associated with the older connectors in the present substation.
11 The replacement of old equipment and hardware will also result in significantly reduced
12 noise levels.

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14 **Q9. Does this complete your testimony?**

15 A9. Yes, it does.

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1 Stantec Consulting Services, Inc.

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Robert F. Kischko PE

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Electrical Division Manager

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At North Springfield, Vermont this _____ day of June, 2010, personally appeared

9

Robert F. Kischko, who acknowledged that the facts and matters contained herein are

10

true to the best of his knowledge, information and belief, and that he executed the

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foregoing document as his free act and deed.

12

13

Before me,

14

15

Notary Public

16

My Commission Expires _____

17

18


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1 Stantec Consulting Services, Inc.

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4 Robert F. Kischko PE
5 Electrical Division Manager
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7

8 At North Springfield, Vermont this 29th day of June, 2010, personally appeared
9 Robert F. Kischko, who acknowledged that the facts and matters contained herein are
10 true to the best of his knowledge, information and belief, and that he executed the
11 foregoing document as his free act and deed.
12

13 Before me,

14 
15 Notary Public Susan E. Gagnon
My Commission Expires _____ NOTARY PUBLIC
State of Vermont
My Commission Expires 2/10/2011

